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09 859,655	05 17 2001	Ilan Golecki	050-98-044	3899

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EXAMINER

GOUDREAU, GEORGE A

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 06/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09-259,655

Applicant(s)

Golecki

Examiner

George Goudreau

Group Art Unit

1763

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE

3

MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- ☒ Responsive to communication(s) filed on 3-20-03 (cc. - paper # 7) —
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 1, 3-20 — is/are pending in the application.
- Of the above claim(s) 20 — is/are withdrawn from consideration.
- ☒ Claim(s) 10-19 — is/are allowed.
- ☒ Claim(s) 1, 3-9 — is/are rejected.
- ☐ Claim(s) — is/are objected to.
- ☐ Claim(s) — are subject to restriction or election requirement

## Application Papers

- ☐ The proposed drawing correction, filed on — is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on — is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some\* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No.
- ☐ Copies of the certified copies of the priority documents have been received
- in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: —

## Attachment(s)

Notice of Draftsperson's Patent Drawing Review, PTO-948

Other

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15. This action will not be made final due to the new grounds of rejection.

16. Applicant's arguments with respect to claims of record have been considered but are moot in view of the new ground(s) of rejection.

17. Applicant's election with traverse of the method claims in Paper No. 7 is acknowledged. The traversal is on the ground(s) that the search required for the method claims is also required for the product claims. Therefore there is no serious burden placed upon the examiner by requiring the examiner to examine both the method claims and the product claims. This is not found persuasive because of the following:

The search required for the method claims is not required for the product claims. Similarly, the search required for the product claims is not required for the method claims. It is therefore a burden upon the examiner to require that the examiner examine both the method claims, and the product claims, contrary to what the applicant purports.

The requirement is still deemed proper and is therefore made FINAL.

18. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States

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19. Claims 1, and 5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Pearton et. al. (1992').

Pearton et. al. disclose a process for rie etching a pattern in diamond (i.e. -a carbon film) on a wafer using a plasma which is comprised of O<sub>2</sub>, and a patterned photo resist etch mask in an ECR plasma etcher. The patterned photo resist etch mask is comprised of a layer of Hunt 5209E photo resist which is a type of UV imagable photo resist. Pearton et. al. alternatively teach the usage of an etch mask which is comprised of Ti-Pt-Au to pattern the diamond layer in the process taught above. This is discussed on pages 822-824. This is shown in figures 1-4.

20. Claims 1, 3, 5-6, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Popova (1997').

Popova discloses a process for rie etching a carbon film on the surface of a wafer using an O<sub>2</sub> based plasma and a two layer etch mask. The two layer etch mask is comprised of a top photo resist layer, and a bottom metal layer. The bottom metal layer may be either of Ta or Mo. The top photo resist layer is comprised of AZ1518 which is imaged using UV lithography. This is discussed on pages 681-683. This is shown in figures 1-4.

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in

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22. Claims 3-4, and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the reference as applied in paragraph 19 above.

The reference as applied in paragraph 19 above fail to disclose the following aspects of applicant's claimed invention:

- the specific UV imaging of the photo resist layer to form a patterned photo resist etch mask;
- the specific removal of the photo resist etch mask after the etching step has been completed;
- the specific usage of a composite etch mask which is comprised of (photo resist-Au-Pt-Ti); and
- the specific usage of a melting step to remove the Au-Pt-Ti mask etch mask from the substrate after the etching step has been completed

It would have been obvious to one skilled in the art to remove the photo resist etch mask after the etching step has been completed in the process taught above based upon the following. The removal of an etching mask after it has been used in an etching process to pattern a substrate is conventional or at least well known in the semiconductor processing arts. (The examiner takes official notice in this regard.) Further, some means would have had to have been provided to remove the patterned photo resist etch mask from the substrate in the process taught above in

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It would have been obvious to one skilled in the art to use UV light to image the photo resist layer in the process taught above based upon the following. The usage of UV light to image a UV sensitive photo resist layer is conventional or at least well known in the semiconductor processing arts. (The examiner takes official notice in this regard.) Further, this simply represents the usage of an alternative, and at least equivalent means for imaging the UV sensitive photo resist layer in the process taught above to the specific usage of other such means.

It would have been obvious to one skilled in the art to employ an etch mask which is comprised of (photo resist-Au-Pt-Ti) to pattern the diamond layer (i.e.-work piece) in the process taught above based upon the following. The reference teaches the equivalency in using either a patterned etch mask which is comprised of a photo resist layer or a (Au-Pt-Ti) multi-layer structure. Thus, it would have been obvious to one skilled in the art to employ an etching mask in the etching process which is taught above which is comprised of each of a photo resist layer, and a Au-Pt-Ti multi-layer together since both types of etch mask may be used to conduct the same etching process. The examiner cites the case law listed below of interest to the applicant in this regard.

In re Crockett 126 U.S.P.Q. 186 (CCPA ) states that where the prior art teaches the use of two materials for the same purpose, it would have been obvious to one of ordinary skill in the art to use the two materials in combination for the same purpose

Au-Pt-Ti layers after the etching process has been completed in the process taught above based

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upon the following. Some type of means would have had to have been provided to remove the patterned Au-Pt-Ti etch mask from the substrate in the process taught above after the etching process has been completed in order to allow further processing of the substrate in the process taught above. Further, the usage of melting means to remove a metallic etch mask from the surface of a substrate after an etching process has been completed is conventional or at least well known in the semiconductor processing arts. (The examiner takes official notice in this regard.) Further, this simply represents the usage of an alternative, and at least equivalent means for removing a metallic etch mask from the surface of a substrate after an etching process has been completed in the process taught above to the specific usage of other such means.

23. Claims 4, and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the reference as applied in paragraph 20 above.

The reference as applied in paragraph 20 above fail to disclose the following aspects of applicant's claimed invention:

- the specific removal of the photo resist layer of the etch mask after the etching step has been completed in the process taught above; and
- the specific usage of a melting step to remove the Mo or Ta layer of the etch mask in the process taught above after the etching process has been completed

It would have been obvious to one skilled in the art to remove the photo resist layer

based upon the following. The removal of a photo resist etching mask after it has been used in an

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etching process to pattern a substrate is conventional or at least well known in the semiconductor processing arts. (The examiner takes official notice in this regard.) Further, some means would have had to have been provided to remove the patterned photo resist etch mask from the substrate in the process taught above in order to allow further processing of the substrate in the process taught above.

It would have been obvious to one skilled in the art to employ a process which melts the metal layer portion of the etch mask after the etching process has been completed in the process taught above based upon the following. Some type of means would have had to have been provided to remove the patterned metal layer portion of the etch mask from the substrate in the process taught above after the etching process has been completed in order to allow further processing of the substrate in the process taught above. Further, the usage of melting means to remove a metallic etch mask from the surface of a substrate after an etching process has been completed is conventional or at least well known in the semiconductor processing arts. (The examiner takes official notice in this regard.) Further, this simply represents the usage of an alternative, and at least equivalent means for removing a metallic etch mask from the surface of a substrate after an etching process has been completed in the process taught above to the specific usage of other such means.

24 The prior art made of record and not relied upon is considered pertinent to applicant's



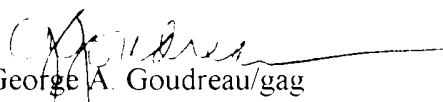
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25. Claims 10-19 are allowed.

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner George A. Goudreau whose telephone number is (703) -308-1915. The examiner can normally be reached on Monday through Friday from 9:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Examiner Gregory Mills, can be reached on (703) -308-1633. The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) -306-3186.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) -308-0661.

  
George A. Goudreau/gag

Primary Examiner

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